

REMARKS

Claims 1-10 are pending herein.

I. The obviousness rejections based on Young (US 6,561,640).

The USPTO respectfully rejects Claims 1-4 and 6-8 under 35 U.S.C. § 103(a) as being obvious over Young. Of these claims, claim 1 is an independent claim.

A. Young does not teach or suggest at least one ultraviolet ray source of the ultraviolet ray having a shorter wavelength component at the light emitting wavelength peak is arranged at a position adjacent to and closer to the recording head than that of the other ultraviolet ray source, as claimed in claim 1.

Regarding the limitations of claim 1 that claim in relevant part:

“at least one ultraviolet ray source of the ultraviolet ray having a shorter wavelength component at the light emitting wavelength peak is arranged at a position adjacent to and closer to the recording head than that of the other ultraviolet ray source;” (emphasis added)

it is respectfully not seen where the cited references teach or suggest the claimed limitation quoted above.

Specifically, on page 3 of the Office Action, the USPTO respectfully alleges that the claimed limitation quoted above is taught at column 4, lines 50-60 of Young. However, this section of Young **merely teaches adjusting the operating wavelength in accordance with the substance’s curing property.** In other words, Young appears to teach that, concerning a particular substance, one can choose a wavelength that corresponds to the curing property of that substance. Thus, an optimal wavelength for one substance is chosen in **one-to-one manner.**

In contrast, present Figure 6 illustrates one embodiment of the structure claimed above. As seen in present Figure 6, ultraviolet irradiating device 9 is adjacent to recording heads 6. Within ultraviolet irradiating device 9, present Figure 6 shows shorter peak wavelength ultraviolet ray sources 15a and longer peak wavelength ultraviolet ray sources 15b. As best seen in present Figure 6, **at least one of the shorter peak wavelength**

ultraviolet ray sources 15a is arranged at a position adjacent to and closer to the recording heads 6 than that of the other ultraviolet ray sources 15b, as claimed in claim 1.

The claimed structure quoted above is important and not trivial because it provides significant **inherent** advantages over conventional devices. For example, when using the claimed device, only the surface of the ink is cured at first with the shorter peak wavelength ultraviolet ray. This **prevents spreading of the ink dot diameter**. Subsequently, irradiating with longer wavelength light penetrates further inside the ink, and the ink is fully cured internally. As a result, an excellent image is formed, with no shrinking or wrinkling of the ink (see page 25 of the present specification for further explanation).

In a device that uses **only one wavelength** that is suitable for the substance, such as in Young, the above benefits cannot be realized. Only by providing an irradiation device that includes a plurality of light sources, and by arranging the plurality of light sources so that the light source that is located at the side closer to the head has a shorter wavelength, can the above benefits be realized.

Thus it is respectfully asserted that Young does not teach or suggest all the claimed limitations of claim 1. Therefore it is further respectfully asserted that claim 1 is not obvious over Young.

II. Previously submitted arguments.

The current Office Action appears substantially identical to the Office Action mailed May 12, 2006, **and the current Office Action notably does not contain any section regarding the Applicants' previously submitted arguments**. Thus, because it appears that the USPTO has neither considered nor addressed the arguments filed on July 12, 2006, these arguments are respectfully reiterated below.

A. Claim 1 is not obvious over Young because Young teaches away from the structure claimed in claim 1.

The Young specification appears to teach that the irradiating device closest to the recording head actually emits ultraviolet rays at a larger peak wavelength than the other

irradiation device. Column 6, lines 46-53, of Young states “the ultraviolet resin that reacts to the least energetic wavelengths of light will be processed first. . . . [T]he ultraviolet resin that reacts to the most energetic wavelength of light . . . is processed last.” Because the **energy of ultraviolet rays is inversely proportional to their wavelength, Young appears to teach that the ink should be irradiated with large wavelength rays first, and short wavelength rays last.**

This teaching of Young is **opposite and different** from the claimed structure of claim 1, which requires that the ink be irradiated by short wavelength rays first, as explained on pages 26-27 of the present specification. This is a **critical difference**, and clearly shows that the structure taught in Young is technically different than the structure claimed in claim 1.

Thus, because **Young is inconsistent with the structure claimed in claim 1**, it is respectfully asserted that Young cannot teach or suggest that a short peak wavelength ultraviolet ray source is arranged at a position adjacent to and closer to the recording head than that of the other ultraviolet ray source, and **thus Young “teaches away” from the claimed structure.** Applicants respectfully note MPEP 2144.05, which states: “A *prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, **teaches away** from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).” (**emphasis added**)

Thus, because Young teaches away from the claimed structure of claim 1, it is respectfully asserted that claim 1 is not obvious over Young.

B. Response to the USPTO’s arguments regarding optimization of ranges.

Also, in response to USPTO assertion that it would be obvious to merely optimize ranges, applicants have already respectfully pointed out in previous responses that no specific ranges are claimed in claim 1, **so this argument does not apply.**

Applicants respectfully assume that this USPTO argument is in reference to the *In re Aller* case as described at MPEP 2144.05 Obviousness of Ranges quoted below where ***specific ranges*** are discussed:

"II. OPTIMIZATION OF RANGES

A. Optimization Within Prior Art Conditions or Through Routine Experimentation

Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be *prima facie* obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997)."

Thus, it is respectfully asserted that the cited reference Young does not teach or suggest the claimed structures quoted above. Therefore, it is respectfully asserted that claim 1 is not obvious over Young.

III. The dependent claims.

As noted above, it is respectfully asserted that independent claim 1 is allowable, and therefore, it is further respectfully asserted that dependent claims 2-10 are also allowable.

IV. Conclusion.

Reconsideration and allowance of all of the claims is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130. Please contact the undersigned for any reason. Applicants seek to cooperate with the Examiner including via telephone if convenient for the Examiner.

Respectfully submitted,

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